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RYEGRASS HERBICIDAL CONTROL IN WHEAT

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SUMMARY

The herbicides Glean, Hoelon and Carbyne were used by themselves and in combination to control ryegrass in wheat at Overton, Texas in 1982-83. Preemergence, postemergence and spring (March 8) application times were utilized to determine most effective date of application. Highest grain yields were harvested from plots treated with a double application of Glean (1/3 oz a.i./a pre and 1/3 oz. postemergence) which yielded 44 bu/a, followed by a single preemergence application of Glean at 1/3 oz a.i/a (39 bu/a). Fall applied herbicides had no phytotoxicity on wheat while spring applied herbicides appeared to stunt and damage wheat even though Glean and Hoelon reduced amount of ryegrass.

OBJECTIVE

The objective of this study was to determine the efficacy of the herbicides Glean, Carbyne and Hoelon on the control of ryegrass in wheat. Many fields in East Texas have been overseeded with ryegrass during periods when they were used for pastures. Since annual ryegrass tends to reseed itself, this specie is a serious weed problem in wheat and other small grain crops that are to be harvested for grain. If wheat is to be utilized as a dual purpose forage-grain crop, label restrictions usually eliminate use of herbicides on the wheat. New herbicides are presently being tested and used for control of ryegrass and other weeds in wheat.

PROCEDURE

The wheat variety McNair 1003 was planted November 1, 1982 in plots 9 X 50 feet. Fertilization included a preplanting application of 60 lbs/a each of N, P_2O_5 and K_2O and the wheat was topdressed with 70 N lbs/a on February 2, 1982. Gulf ryegrass seed was broadcast over the entire experimental area at 25 lbs/a to ensure a high density of ryegrass. The herbicidal treatments included an untreated control

plus two Carbyne fall treatments (1 1/2 pts/a and 3 pts/a) applied post-emergence (1-3 leaf stage). There were five Glean fall treatments (see table 1) and a Hoelon fall treatment. Spring applied treatments included a single treatment of Glean, Carbyne and Hoelon and mixtures of Carbyne with Glean and with Hoelon. The preemergence treatments were applied November 4. The postemergence treatments were applied on November 22 and the spring application was applied on March 8. The spring date was about 2 weeks later than desired, however a combination of rainy and windy weather delayed this application date. The wheat was past the tillering stage and in the early jointing stage.

All herbicides were applied with a CO_2 sprayer. The sprayer was carried by an individual (strapped to back) and a 3 nozzle boom sprayed an area about 6 ft wide through the center of the 50 ft plot. Glean and Hoelon were applied in 20 gal of water/a at 25 PSI with an 8003 nozzle. Carbyne was applied in 10 gal of water/a at 40 PSI with smaller nozzles. Temperatures for the 3 application dates were 62°, 70° and 65°F for the pre, post and spring dates, respectively. Wind was 7 MPH or less for all dates.

Grain was harvested on June 3, 1983 by combining a 4 X 50 ft area with a Hege plot combine. Data on ryegrass control and wheat phytotoxicity were recorded as noted in table 1. Other data collected were broadleaf weed control, heading date, plant height and lodging. There were 3 replications on this study.

RESULTS

Stands of wheat were uniform, but not exceptionally good and probably limited yields somewhat. Ryegrass which had been overseeded over the entire test had extremely high seedling density and this resulted in a great yield depression in plots where ryegrass was not controlled. Highly significant differences were apparent for grain yield between herbicide treatments (table 1). The highest yield was produced by the Glean split (1/3 + 1/3 oz) pre and postemergence treatment (43.5 bu/a). The 1/2 oz/a Glean preemergence treatment was not significantly different from split Glean treatment (39.0 bu/a). The wheat with the 1/2 oz Glean post treatment apparently produced

less grain (and more ryegrass) than did the pre treatment. Little difference for the 1/3/a oz Glean pre or post treatments was apparent for either yield or ryegrass control.

Hoelon controlled ryegrass very well with 100% control, however wheat did not respond by producing the highest yields. Further data is needed to confirm whether these data are real or due to experimental error. Furthermore, at this time Hoelon is not cleared (labeled) for application on wheat in Texas.

Yields on all spring applied treatments were quite low and although some were slightly higher than the control, they were unsatisfactory because of low yields. In addition, phytotoxocity of wheat on the March 25 data was apparent. Heading dates were delayed and plant heights reduced with the spring applied treatments. Data collected in earlier years indicates that a February application of Hoelon was more satisfactory and that less phytotoxicity resulted. However, during 1983, due to unfavorable weather (storms or wind), we were unable to apply the herbicides until March 8th.

Of the three chemicals tested, Glean and Hoelon have excellent herbicidal weed control potential in wheat. Glean has the advantage of controlling broadleaf weeds as well as ryegrass, while with Hoelon, a broadleaf herbicide would also have to be applied [we applied MonDak (Banvel + MCPA) to all plots on February 18]. In this experiment, the application of Carbyne was not beneficial.

After the wheat was harvested, soybeans and grain sorghum were planted on June 17, 1983 to determine if residual herbicides might damage these crops. We were unable to observe any phytotoxicity following any of the treatments. This test was located on a deep sand with a pH of 6.5.

Table 1. Herbicidal treatments for control of ryegrass on McNair 1003 wheat and effect on yield, ryegrass control and phytotoxicity on wheat

Treatment	Yield bu/a	% Control on 1-14-83	% Control on 3-3-83[1]	% Stunting of ryegrass on 3-3-83	% Broadleaf control on 3-3-83	% Ryegrass injury on 3-25-83[3]	% Wheat injury 3-25-83	Heading date	Plant height inches	% Lodging
Control	9.6	0	0	0	0	0	0	4-18	32	50
Carbyne 6 oz a.i./a Postemergence	15.1	17	20	13	40	20	0	4-19	35	17
Carbyne 12 oz a.i/a Postemergence	14.9	67	43	50	40	30	0	4-21	31	10
Hoelon 1 lb a.i./a Postemergence	33.2	100	100	-[2]	0	99	0	4-18	35	0
Glean 1/3 oz/a Preemergence	27.8	67	50	73	93	57	0	4-18	35	3
Glean 1/2 oz/a Preemergence	39.0	90	73	90	100	85	0	4-18	38	0
Glean 1/3 oz/a Postemergence	26.6	53	57	67	100	57	0	4-18	35	0
Glean 1/2 oz/a Postemergence	30.8	63	57	77	67	67	0	4-18	35	2
Glean 1/3 oz pre + 1/3 oz Postemergence	43.5	95	82	90	100	87	0	4-18	39	0
Carbyne 12 oz a.i./a Spring	5.9	0	0	0	0	40	20	4-26	25	43
Carbyne 12 oz/ai/a + Hoelon 1 lb a.i./a Spring	11.5	0	0	0	0	72	33	4-22	29	0
Carbyne 12 oz/a.i./a + Glean 1/2 oz/a Spring applied	7.0	0	0	0	0	53	30	4-22	29	43
Hoelon 1.25 lb a.i./a Spring applied	12.8	0	0	0	0	78	26	4-20	29	0
Glean 1/2 oz a.i./a	9.7	0	0	0	0	27	13	4-18	29	37
Glean 2/3 oz a.i./a	5.3	0	0	0	0	43	26	4-22	26	42
Mean	19.5	37	32	31	36	54	10	-	32	16
CV (%)	27	33	38	38	47	27	62	-	9	79
LSD 0.05 level[4]	8.9	20.2	20.5	19.9	28.7	24.8	10.4	-	5.2	22

Planted on November 1, 1982. Harvested on June 3, 1983.
Pre-emergence treatments were applied on November 4, Post emergence treatments applied on November 22, 1982.
Spring applied treatments were applied on March 8, 1983 in fully tillered stage.
All plots sprayed with MonDak (Banvel + MCPA) on February 18, 1983.

[1]Percent control on 3-3-83 is estimate of ryegrass that was completely eliminated or missing from plots.

[2]There was no ryegrass present.

[3]General rating of % ryegrass control on this date.

[4]The least significant difference (LSD) should be used to compare the control with each treatment. Differences greater than the LSD are significant 95% of the time.